IP412

Micro ATX ETX (3.0) Baseboard

User's Manual

Version 1.0
(Apr. 2017)

iBASE

Compliance

CE

In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.

FC

This product has been tested and found to comply with the limits for a Class A device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

Green IBASE

This product is compliant with the current RoHS restrictions and prohibits use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

Important Safety Information

Carefully read the precautions before using the board.

Environmental conditions:

- Use this product in environments with ambient temperatures between 0˚C and 60˚C.
- Do not leave this product in an environment where the storage temperature may be below -20° C or above 80° C. To prevent from damages, the product must be used in a controlled environment.

Care for your IBASE products:

- Before cleaning the PCB, unplug all cables and remove the battery.
- Clean the PCB with a circuit board cleaner or degreaser, or use cotton swabs and alcohol.
- Vacuum the dust with a computer vacuum cleaner to prevent the fan from being clogged.

WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the top of this product.

Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the PCB on an anti-static kit or mat.
- Hold the edges of PCB when handling.
- Touch the edges of non-metallic components of the product instead of the surface of the PCB.
- Ground yourself by touching a grounded conductor or a grounded bit of metal frequently to discharge any static.

CAUTION

Danger of explosion if the internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or recycle them at a local recycling facility or battery collection point.

Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

* PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.
   - Product model name
   - Product serial number
   - Detailed description of the problem
   - The error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software in use (such as OS and application software, including the version numbers)
3. If repair service is required, you can download the RMA form at http://www.ibase.com.tw/english/Supports/RMAService/. Fill out the form and contact your distributor or sales representative.

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Table of Contents

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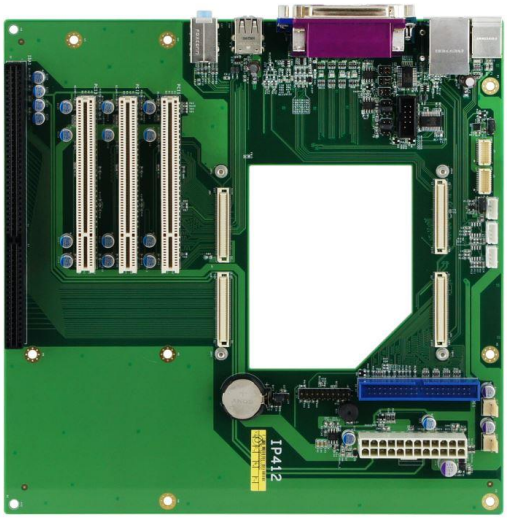
Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Specifications
- Board Overview
- Board Dimensions

1.1 Introduction

IP412 is a Micro ATX ETX baseboard, offering expansion slots like ISA and PCI and rich peripheral ports as the photo shown below. It is able to be operated at the ambient operating temperature ranging from 0 ~ 60 °C and even from -20 ~ 80 °C for storage.



1.2 Features

- Rich peripheral ports: USB 2.0, LAN, PS/2, VGA, Audio jacks, serial and parallel ports
- ISA and PCI expansion slots
- On-board headers for serial port, LVDS, E-IDE, ETX, and ATX power connector

1.3 Specifications

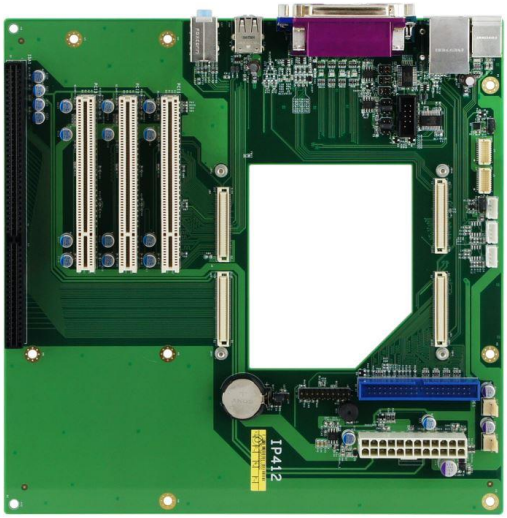
Product Name	IP412 (ETX 3.0)
Form Factor	Micro ATX ETX baseboard
Power Supply	ATX Power
Dimensions	244 x 244 mm (9.61” x 9.61”)
RoHS	Yes
I/O Ports	
Display	1 x VGA 2 x LVDS 20-pin box header 18/24-bit
LAN	1 x RJ45 10/100 Mbps LAN
USB	4 x USB 2.0:
Serial	**2 x COM ports:** • COM1: RS-232/422/485 (I/O coastline connector, jumper-less selection) • COM2: RS-232 only (via an on-board box-header)
Parallel	1 x Printer Port
E-IDE	1 x 40-pin box header
Audio Jack	• 1 x Line-In • 1 x Line-Out • 1 x Microphone Input
Keyboard & Mouse	1 x PS/2 keyboard / mouse stack connector
Battery for RTC/CMOS	1 x Lithium battery cell for RTC of COM Express module
Expansion Slots	3 x PCI (32-bit) slots 1 x ISA slot

Environment	
Temperature	• Operation: 0 ~ 60 °C • Storage: -20 ~ 80 °C
Relative Humidity	0 ~ 90 %, non-condensing at 60 °C

All specifications are subject to change without prior notice.

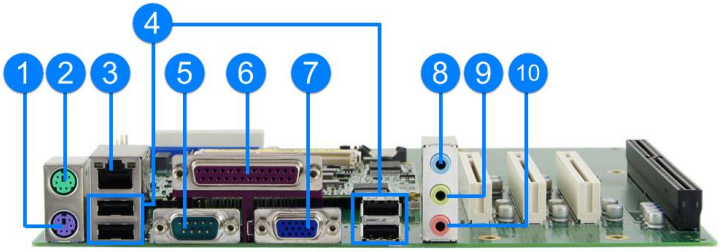
1.4 Overview

Top View



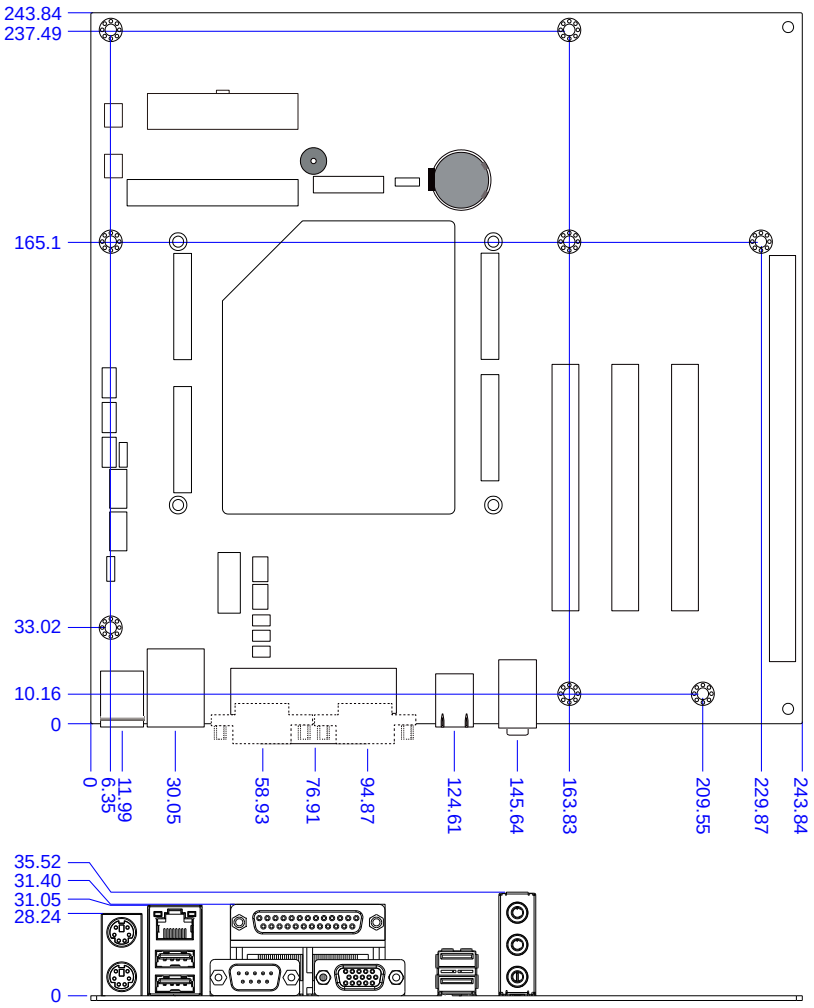
* The photos above are for reference only. Some minor components may differ.

I/O View



No.	Name	No.	Name
1	PS/2 – Keyboard	6	Parallel Port
2	PS/2 – Mouse	7	VGA Port
3	LAN Port (10/100)	8	Line-In
4	USB 2.0 Ports	9	Line-Out
5	COM1 RS-232/422/485 Port	10	Microphone Input

1.5 Dimensions



Chapter 2
Hardware Configuration

This section provides information on jumper settings and connectors on the IP412 in order to set up a workable system.

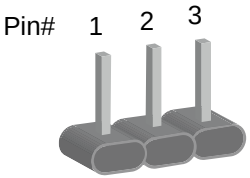
- Jumper and connector locations
- Jumper settings and information of connectors

2.1 Setting the Jumpers

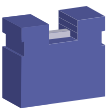
Set up and configure your IP412 by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

2.2.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

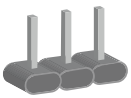
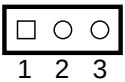
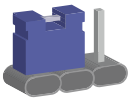
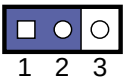
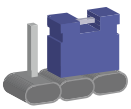
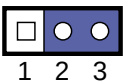


A 3-pin jumper



A jumper cap

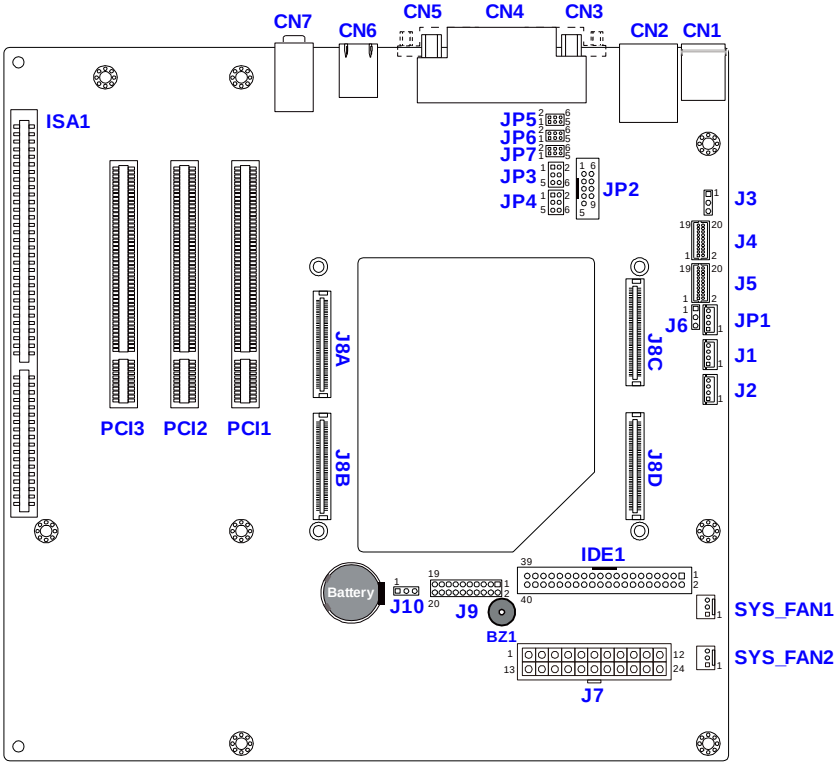
Refer to the illustration below to set jumpers.

Pin closed	Oblique view	Schematic illustration in the manual
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.2 Connector Locations on IP412

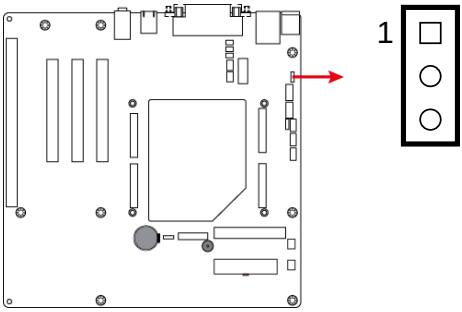


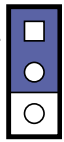
Board diagram of IP412

2.3 Jumpers Quick Reference

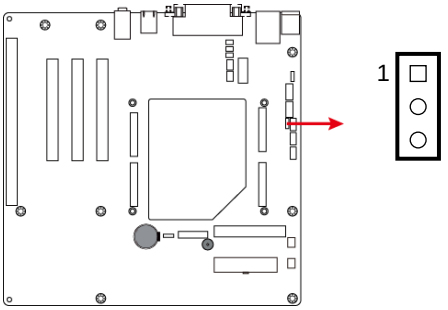
Function	Jumper Name	Page
LVDS Panel Power Selection	J3	11
LVDS Backlight Brightness Control Selection	J6	12
CMOS Data Clearance	J10	12
COM1 Power Selection	JP3	13
COM1 RS-232/422/485 Selection	JP5, JP6, JP7	14
COM2 RS-232 Power Selection	JP4	15

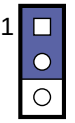
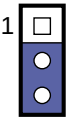
2.3.1 LVDS Panel Power Selection (J3)



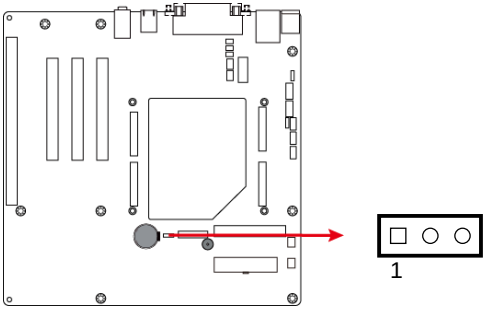
Function	Pin closed	Illustration
3.3V (default)	1-2	
5V	2-3	

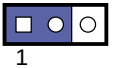
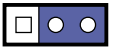
2.3.2 LVDS Panel Brightness Control Selection (J6)



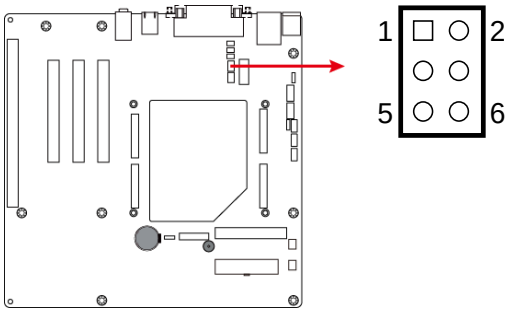
Function	Pin closed	Illustration
3.3V (default)	1-2	
5V	2-3	

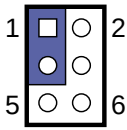
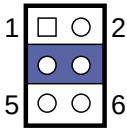
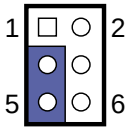
2.3.3 CMOS Data Clearance (J10)



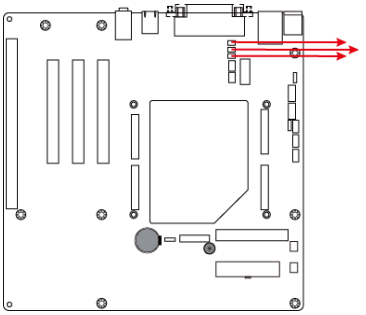
Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

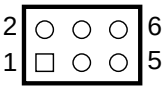
2.3.4 COM1 Power Selection (JP3)

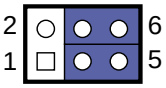
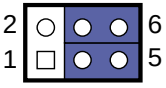
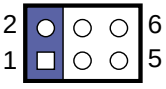
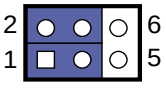
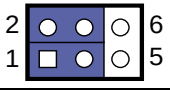
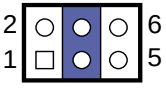
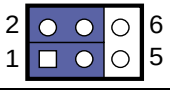
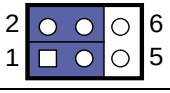
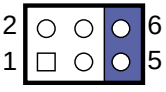


Function	Pin closed	Illustration
12V	1-3	
RI (default)	3-4	
5V	3-5	

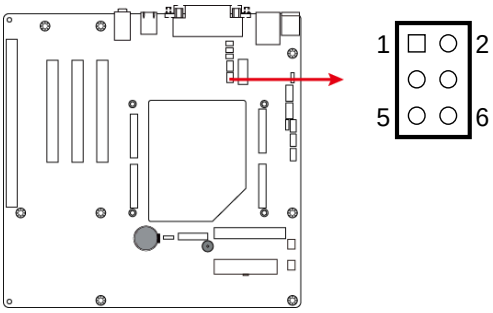
2.3.5 COM1 RS-232/422/285 Selection (JP5, JP6, JP7)

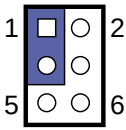
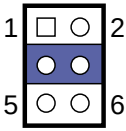
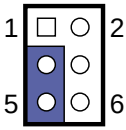




Function	Pin closed	Illustration
RS-232 (default)	**JP5:** 3-5, 4-6	
	JP6: 3-5, 4-6	
	JP7: 1-2	
RS-422	**JP5:** 1-3, 2-4	
	JP6: 1-3, 2-4	
	JP7: 3-4	
RS-485	**JP5:** 1-3, 2-4	
	JP6: 1-3, 2-4	
	JP7: 5-6	

2.3.6 COM2 RS-232 Power Selection (JP4)

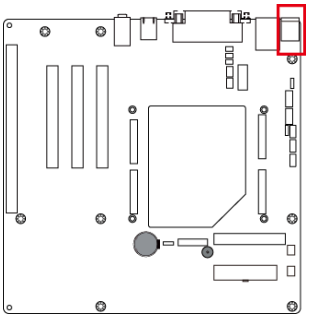


Function	Pin closed	Illustration
12V	1-3	
RI (default)	3-4	
5V	3-5	

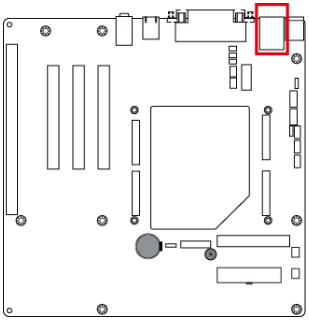
2.4 Connectors Quick Reference

Function	Connector Name	Page
PS/2 Keyboard and Mouse Ports	CN1	17
LAN Port (10/100) and USB 2.0 Ports	CN2	17
Parallel Port	CN4	17
COM1 RS-232/422/485 Port	CN3	18
VGA Port	CN5	19
USB Ports	CN6	19
HD Audio Jacks	CN7	19
I^2C Connector	J1	19
SMB Connector	J2	20
LVDS Connector	J4 (Channel 2), J5 (Channel 1)	21
ATX Power Connector	J7	22
ETX Socket	J8	23
System Function Connector	J9	23
Panel Inverter Power Connector	JP1	24
COM2 RS-232 Port	JP2	25
PCI 32-bit Slot	PCI1, PCI2, PCI3	25
ISA Slot	ISA1	26
System Fan Power Connector	SYS_FAN1, SYS_FAN2	26
IDE Connector	IDE1	27

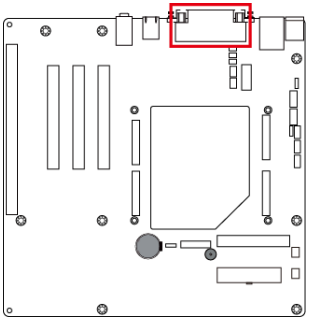
2.4.1 PS/2 Keyboard and Mouse Ports (CN1)



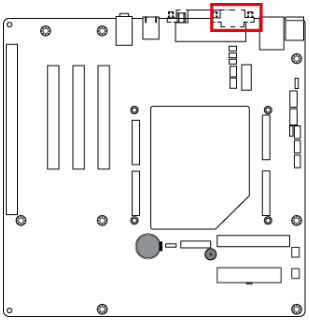
2.4.2 LAN Port (10/100) and USB 2.0 Ports (CN2)

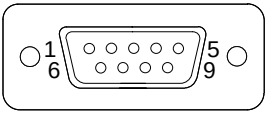


2.4.3 Parallel Port (CN4)



2.4.4 COM1 RS-232/422/485 Port (CN3)



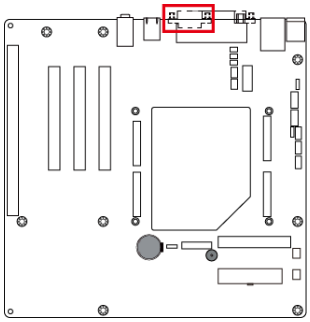


COM1 port is jumper-less and configurable in BIOS.

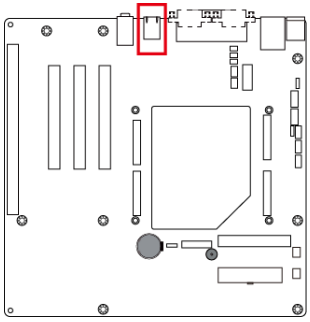
Pin	Assigment	Pin	Assigment
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	GND, ground		

Pin	Assignment		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

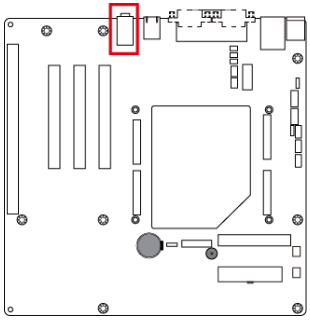
2.4.5 VGA Port (CN5)



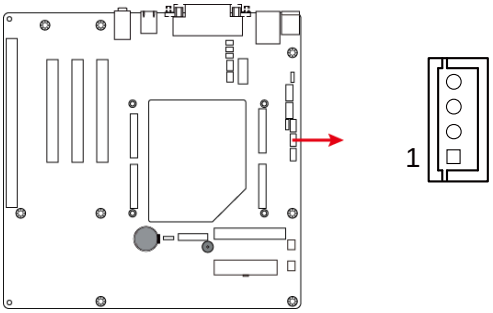
2.4.6 USB Ports (CN6)



2.4.7 HD Audio Jacks (CN7)

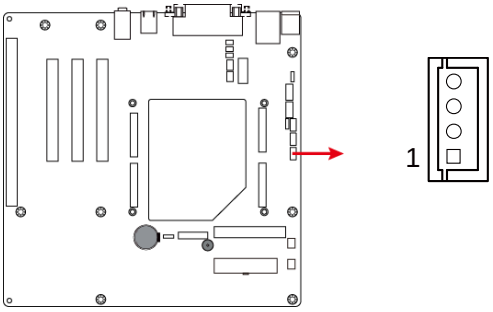


2.4.8 I²C Connector (J1)



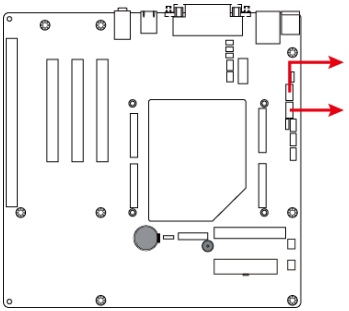
Pin	Assigment	Pin	Assigment
1	3.3V	3	I²C_DATA
2	I²C_CLK	4	GND

2.4.9 SMB Connector (J2)



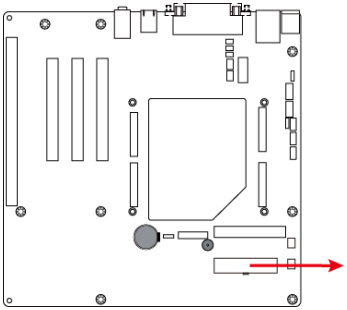
Pin	Assigment	Pin	Assigment
1	3.3V	3	SMB_DATA
2	SMB_CLK	4	GND

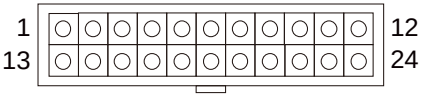
2.4.10 LVDS Connector (J4, J5)



Pin	Assigment	Pin	Assigment
1	TX0P	11	Ground
2	TX0N	12	Ground
3	Ground	13	CLKP
4	Ground	14	CLKN
5	TX1P	15	Ground
6	TX1N	16	Ground
7	Ground	17	TX3P
8	Ground	18	TX3N
9	TX2P	19	Power
10	TX2N	20	Power

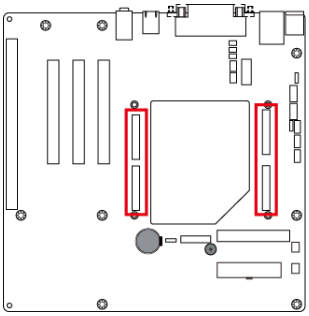
2.4.11 ATX Power Connector (J7)



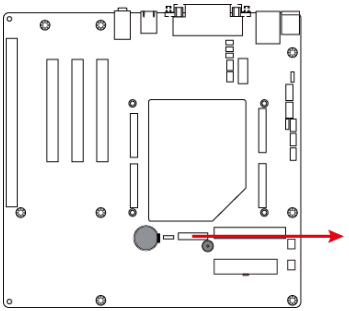


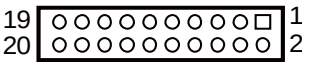
Pin	Assigment	Pin	Assigment
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS-ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

2.4.12 ETX Socket (J8)



2.4.13 System Function Connector (J9)





Pin	Assigment	Pin	Assigment
1	SPK	11	NC
2	PWR LED +	12	GND
3	NC	13	PWR_SW
4	NC	14	PWR_SW
5	GND	15	NC
6	PWR LED- (GND)	16	NC
7	SPK (VCC)	17	RST
8	NC	18	GND
9	NC	19	HDD LED -
10	GND	20	HDD LED +

J9 is utilized for system indicators to provide light indication of the computer activities and switches to change the computer status. It provides interfaces for the following functions.

- **ATX Power ON Switch (Pins 13 and 14)**

  The 2 pins makes an “ATX Power Supply On/Off Switch” for the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will power off the system.

- **Hard Disk Drive LED Connector (Pins 19 and 20)**

  This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

- **Reset Switch (Pins 17 and 18)**

  The reset switch allows you to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

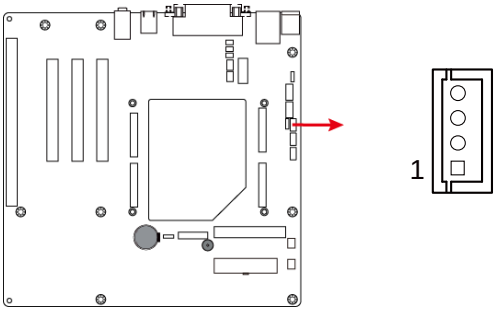
- **Power LED (Pins 2 and 6)**

  This connector connects to the system power LED on control panel. This LED will light when the system turns on.

- **Speaker (Pins 1 and 7)**

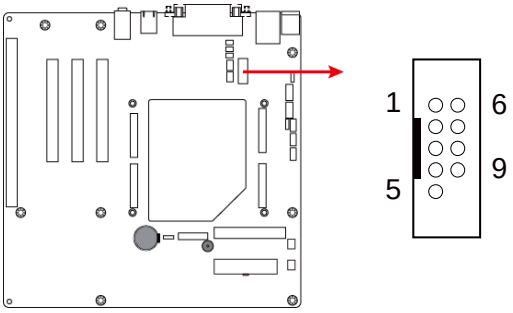
  This connector connects to the system speaker.

2.4.14 Panel Inverter Power Connector (JP1)



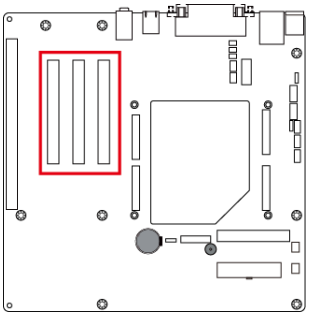
Pin	Assigment	Pin	Assigment
1	+12V	3	ADJ
2	Backlight Enable	4	Ground

2.4.15 COM2 RS-232 Port (JP2)

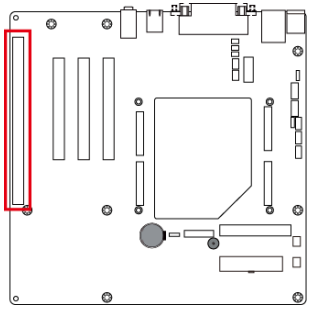


Pin	Assigment	Pin	Assigment
1	DCD#	6	DSR#
2	SIN	7	RTS#
3	SOUT	8	CTS#
4	DTR#	9	RI#
5	GND	10	- -

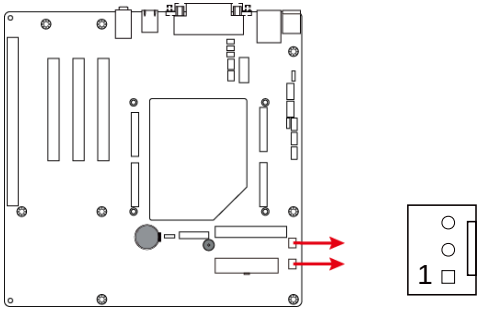
2.4.16 PCI 32-bit Slot (PCI1, PCI2, PCI3)



2.4.17 ISA Slot (ISA1)

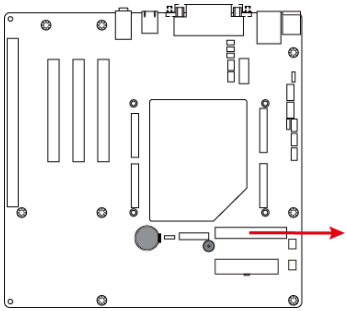


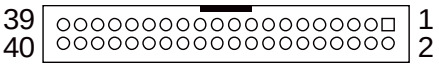
2.4.18 System Fan Power Connector (SYS_FAN1, SYS_FAN2)



Pin	Assigment	Pin	Assigment
1	Ground	3	NC
2	12V		

2.4.19 E-IDE Connector (IDE1)





Pin	Assigment	Pin	Assigment
1	Reset IDE	21	DRQ0
2	Ground	22	Ground
3	Host data 7	23	Host IOW
4	Host data 8	24	Ground
5	Host data 6	25	Host IOR
6	Host data 9	26	Ground
7	Host data 5	27	IOCHRDY
8	Host data 10	28	Host ALE
9	Host data 4	29	DACK0
10	Host data 11	30	Ground
11	Host data 3	31	IRQ14
12	Host data 12	32	No connect
13	Host data 2	33	Address 1
14	Host data 13	34	No connect
15	Host data 1	35	Address 0
16	Host data 14	36	Address 2
17	Host data 0	37	Chip select 0
18	Host data 15	38	Chip select 1
19	Ground	39	Activity
20	Protect pin	40	Ground